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DESIGN AND COMPARISON OF HETEROGENOUS DATA TRANSFER PROTOCOLS FOR WATER RESOURCES IN WATERSHEDS

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Abstract

With the development of sensing technology, the data on water resources has the characteristics of multiple sources and heterogeneity. Multi-source refers to the diversity of data sources, including sensor data, satellite remote sensing data, statistical yearbook data, etc. Heterogeneity is mainly manifested as syntactic heterogeneity and semantic heterogeneity. How to integrate multi-source heterogeneous data is of great significance for watershed water resources management. Thus, this paper compares the performance of JavaScript Object Notation(JSON), Protocol Buffer (ProtoBuf), and Abstract Syntax Notation One (ASN.1) in different scenarios based on the analysis of different sensor data types. Then, the Standard Ecological Compensation Multi-Source Big Data (SECMBD) was designed based on ASN.1. The findings reveal that ASN.1 exhibits higher space efficiency and is a better choice for constructing SECMBD which can achieve standardized data transmission and sharing. This paper can provide a reference for the storage and utilization of water resource multi-source heterogeneous big data.

Key words: ASN.1, Data Fusion, Heterogeneous Data Transfer Protocols, Internet of Things, Water Resource Data Management

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